

Amendment and Response

Applicant: N. Lee Rhodes

Serial No.: 09/919,149

Filed: July 31, 2001

Docket No.: 10013112-1

Title: NETWORK USAGE ANALYSIS SYSTEM HAVING DYNAMIC STATISTICAL DATA
DISTRIBUTION SYSTEM AND METHOD

REMARKS

The following remarks are made in response to the Office Action mailed November 5, 2004. Claims 1-20 were rejected. With this Response, claims 2 and 5 have been amended. Claims 21-22 have been added. Claims 1-22 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 112

Claims 2, 3, and 5 are rejected under 35 U.S.C. § 112, second paragraph. Claim 2 has been amended to delete “incoming” to provide proper antecedent basis. Claim 3 depends directly on amended claim 2. Claim 5 has been amended to render the claim definite.

In view of the above, Applicant respectfully submits the rejection of claims 2, 3 and 5 under 35 U.S.C. § 112 should be withdrawn.

Claim Rejections under 35 U.S.C. § 102

Claims 1, 4-8, 16, 18, and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Claffy et al. (Claffy). Applicant submits that Claffy fails to disclose the invention of independent claims 1, 16, and 20.

Independent claims 1 and 20 recite a method for substantially real-time analyzing of a stream of data and a computer-readable medium having executable instructions for performing the method, respectively. The method comprises receiving the stream of data; determining a data distribution representative of the stream of data, including creating data bins having exponentially increasing sizes; allocating statistical representation of the data in the data bins; and using the data distribution to analyze the stream of data. Similarly, independent claim 16 recites a system for analyzing a stream of data. The system comprises a dynamic distribution collector configured for receiving the stream of data, and determining a data distribution representative of the stream of data, including configured to create data bins having exponentially increasing sizes, and recording a statistical representation of the data in the data bins.

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Claffy discloses a study of the performance of various methods of sampling in answering questions related to wide area network traffic characterization. Using a packet trace from a network environment that aggregates traffic from a large number of sources, Claffy simulates various sampling approaches, including time driven and event driven methods, with both random and deterministic selection patterns, at a variety of granularities. Using several metrics that indicate the similarity between two distributions, Claffy compares the sample traces to the parent population. (See Claffy abstract).

One metric used to measure the degree of similarity between two distributions is the phi coefficient. The phi coefficient is derived from the χ^2 metric. (See section 5.2, paragraph 7). Claffy presents results in terms of the range of phi values for a given analysis target. Claffy also presents results of how the phi values change as one dimension of the parameter space is varied while holding the other dimensions constant. A phi value of zero is consistent with a sample which perfectly reflects the parent population. In general, larger phi values will correspond to poorer samples, i.e., those that diverge more widely from the sampled population. (See section 6).

Claffy fails to disclose **determining a data distribution representative of the stream of data, including creating data bins having exponentially increasing sizes; allocating statistical representation of the data in the data bins; and using the data distribution to analyze the stream of data.** The Examiner submits that these limitations are disclosed in Claffy in figures 6 and 7 and in section 7.2. (Office Action, page 3). Applicant respectfully submits that Figures 6 and 7 and section 7.2 of Claffy do not disclose these limitations.

Figure 6 shows boxplots of the range of phi value scores for each systematic sample for the packet size distribution assessment. The x-axis corresponds to the sampling granularity, or the reciprocal of the sampling fraction. The figure shows two clear effects of decreasing the sampling fraction, and holds with other methods as well: increasing values, which indicate poorer snapshots of the parent population; and increasing variance within the set of samples for each method. Figure 7 shows the means of the boxplots in figure 6. (See section 7.2, paragraph 1, lines 8-19). Figures 6 and 7 and section 7.2 of Claffy disclose a

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method for empirically evaluating a sampling method, not a method or system for analyzing a stream of data as recited in claims 1, 16, and 20.

Dependent claims 4-8 depend directly or indirectly upon independent claim 1. Accordingly, Applicant submits dependent claims 4-8 are also allowable over the art of record. Dependent claim 18 depends directly upon independent claim 16. Accordingly, Applicant submits dependent claim 18 is also allowable over the art of record. Therefore, Applicant respectfully submits that the above-rejections of claims 1, 4-8, 16, 18, and 20 under 35 U.S.C. § 102(b) should be withdrawn.

Claim Rejections under 35 U.S.C. § 103

Claims 2, 3, 10-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Claffy et al. as applied to claims 1 and 16 above, and further in view of Wright ("A Simple Hash Table Implementation").

Claims 2, 3, and 10-15 depend directly or indirectly upon independent claim 1. Accordingly, Applicant submits dependent claims 2, 3, and 10-15 are also allowable over the art of record.

Dependent claim 17 depends directly upon independent claim 16. Accordingly, Applicant submits dependent claim 17 is also allowable over the art of record.

In addition, Wright relates to a simple hash table implementation, while the current application relates to real-time analyzing of a stream of data. Hash table implementations are not related to the current invention. Further, the Wright reference teaches away from the current invention. The Wright reference states that to effectively use a hash table, you need to know approximately how many data items you will have. (See page 1, second paragraph). In the current invention, the number of data items to be allocated to the data bins is unknown. For at least these reasons, a person having ordinary skill in the art could not combine the Claffy reference with the Wright reference and arrive at the invention of dependent claims 2, 3, 10-15, and 17.

Therefore, Applicant respectfully submits that the above-rejections of claims 2, 3, 10-15, and 17 under 35 U.S.C. § 103(a) should be withdrawn.

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Added Claims

Claims 21-22 have been added. Applicant believes added claims 21 and 22 to be allowable over the art of record.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-22 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-22 is respectfully requested.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either William J. Streeter at Telephone No. (970) 898-3886, Facsimile No. (970) 898-7247 or Steven E. Dicke at Telephone No. (612) 573-2002, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 31 day of January, 2005.

By Steven E. Dicke
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